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THE BONE-CAVES OF POLAND.

The bone-caves of Ojcow in Poland. By Prof. Dr. FERD. RÖMER. Translated by John Edward Lee, F.G.S., F.S.A. London, Longmans, 1884. 41 p., 14 pl. 4s.

OUR knowledge of primitive man in Europe, during the paleolithic age, is mainly confined to what has been learned in regard to the life and habits of the so-called 'cave-dwellers.' This has been principally obtained from the scientific exploration of numerous caverns, mostly situated in western Europe, in France, Belgium, and England; although inhabited caves are not wanting in other countries, especially in Germany, Spain, and Italy. The farthest point to the south to which they have been traced, is Sicily and the extreme south-eastern promontory of Italy; in central Europe they are quite rare; while the most easterly part in which any similar discovery has been made is Russian Poland. There, in the neighborhood of the village of Ojcow (pronounced Oizoff), some fifteen miles or more north of Cracow, several caves have been discovered within the last ten years in the Jurassic limestone, which forms the sides of some of the beautiful valleys, in which there have been found human remains associated with the bones of animals, both those extinct and those still living. In the year 1874 Count Johann Zawisza of Warsaw began to publish in the scientific journals of that city, in Polish and French, the results of his careful explorations of many of them; and the *Matériaux* for that year contained a *résumé* of two of these papers. At the prehistoric congress held in Stockholm, also in 1874, Count Zawisza gave a brief account of his work in a paper entitled 'The age of polished stone in Poland.' He again called attention to his discoveries at the next congress at Buda-Pesth in 1876, mainly in the one called 'The cave of the mammoth;' about which he has since published more in the memoirs of the Anthropological society of Paris in 1878 and 1879.

In the *Matériaux* for January, 1882, M. G. Ossowski has given an account of the researches undertaken by him in 1879, on behalf of the Academy of sciences of Cracow, in several caverns situated in the eastern part of the *arrondissement* of Cracow, especially in the valley of Mnikow. About twenty of them yielded objects of human fabrication, all belonging to the neolithic period. Those fashioned out of bone were the most remarkable, and these are figured in two plates.

This comprises all that had been given to the world, so far as we are aware, in regard to

the caves of Poland, prior to the appearance of the present work at Breslau in 1883. In it Professor Römer has given quite an elaborate report upon the explorations carried on by himself in 1878 and 1879, more especially in the cave of Jerzmanowice; together with an account of the results of Count Zawisza's explorations of 'The cave of the mammoth,' and some slight notice of what has been discovered by other persons in six different caverns. It is evidently intended to serve as a complete monograph upon the Ojcow caves; and from the fact that it has been deemed worthy of an English dress by the accomplished translator of Dr. Keller's 'Lake-dwellings,' and the handsome manner in which it is printed and illustrated, we hoped to find in it a fit companion to such classic works of prehistoric archeology as Lartet and Christy's 'Reliquiæ Aquatanicæ,' Dupont's 'L'homme pendant les âges de la pierre,' and Boyd Dawkins's 'Cave-hunting.' We regret to be obliged to state that our expectations have been disappointed, and that we have found the work quite unsatisfactory, at least upon the archeological side. In the paleontological department, there is evidence of knowledge and experience, leaving little to desire; but it is plain that neither the author nor the translator has any clear and adequate comprehension of the distinction between the paleolithic and the neolithic ages. We find the statement on p. 41, that "the remains of the ancient inhabitants consist of implements of hammered flint (paleolithic Tr.)," etc.; while on p. 7 it is said that in the cave of Jerzmanowice "no polished flint tools were found. The flint implements all belong to the older stone age." Evidently, 'implements of hammered flint' and 'polished flint tools' are intended to be contrasted; but, if we turn to the plates, we find that all the objects represented are either flakes, knives, or scrapers, and not a single true paleolithic implement is either delineated in them or described in the text. Very different is Count Zawisza's careful statement, that, "of the fourteen caverns I have excavated, one only had been inhabited by quaternary man; three belonged to the age of polished stone; two had served for a habitation of cave-bears; and in the others I found nothing" (*Cong. of Stockholm*, p. 260). Again: "The deeper we dug, the larger became the implements of the Moustier type, or of those of the quaternary gravels of Mesvin" (*Matériaux*, vol. ix. p. 90). So, too, Dr. Römer evidently is not aware that pottery was unknown in paleolithic times; for in his account of the cave of Jerzmanowice,

in which he declares that "the implements all belong to the older stone age," he states that "numerous pieces of burnt pottery gave further evidence of the existence of man in the cave."

In brief, we miss any indication of the employment of the strictly scientific methods of conducting explorations, according to which the exact depth and position in which each object was found are noted, whether it was covered by a floor of stalagmite or not, and what articles were found together; and we have instead only a jumble of miscellaneous remarks, however interesting in themselves. The plates are beautifully executed, and are valuable, especially those in which the animal remains are delineated; but the half-dozen devoted to archeology represent nothing absolutely novel, although several important specimens are figured. A number of human skulls and bones have been found in the different caves, which have been submitted to Professor Virchow's examination; and an elaborate account is given of his careful study of them. He reports that he finds nothing to indicate a high antiquity for them, and no material differences from the form of skull of the present inhabitants of the country: in short, there is nothing to prove that they are not the result of intrusive burials, and consequently not of the same age as the implements occurring with them.

Two interesting facts we find mentioned: one is the enormous amount of the remains of the cave-bear, discovered by Dr. Römer in the cavern explored by him, amounting to as many as one thousand individuals; the other is the proof obtained of the co-existence of man and the cave-bear from the finding of a vertebra of the bear, and an undoubted flint implement, embedded side by side in the same solid crystalline stalagmite. It is evident, from the general result of the explorations, that the caves were inhabited almost exclusively in neolithic times; although Professor Römer thinks that the occupation continued into 'the bronze age.' But the fibula figured by him in proof of this is plainly Roman; and in one cavern, even glass beads were found at a considerable depth in the deposit. Complete evidence of the very late occupation of one cavern, at least, is afforded by the discovery in it of a *denarius* of Antoninus Pius, of the year 140. But there is nothing remarkable in this, as Roman coins have frequently been found in the neighboring province of Silesia; and a hoard of early Greek coins was recently dug up near Bromberg, in Posen, on the lower

Vistula. Their presence is to be traced with the greatest probability to the traffic in amber, which has existed from the remotest antiquity, and for which the trade route lay directly up the valley of the Vistula to Königsberg, in whose neighborhood similar finds have occurred.

The author states in his preface, that he had "the determination of undertaking a thorough investigation of these caves," but that he regrets, that, with respect to "the specimens found, it cannot always be positively stated from which bed in the caves they were taken; but the same is the case with most of the caves which have been excavated in Germany." We can but regard such a statement as this as disgraceful to German science, if true; and it certainly is not true of cave-explorations in other countries.

ILLINOIS COAL-PRODUCTION.

Statistics of coal-production in Illinois, 1883: A supplemental report of the State bureau of labor statistics. JOHN S. LORD, secretary. Springfield, Rokker pr., 1883. 144 p., 2 maps. 8°.

THIS report, published in advance of the regular biennial report of the bureau for 1884, makes quite a comprehensive showing in regard to the coal-production of the state, and demonstrates the increasing value of the industry. Since 1870 the output of coal in Illinois has increased from more than two and a half millions of tons to more than ten and a half.

In the introduction, Illinois is stated to have no equal, in the states west of Pennsylvania, in the extent of its coal-fields, the abundance and accessibility of its deposits, in its transportation facilities, or in its annual contribution to the fuel-supply of the country. As to the extent and accessibility of the coal-fields, and the facility of transportation, this statement is undoubtedly correct. Albert Williams, jun., in the 'Mineral resources of the United States,' estimates that the state contains a total of 28,845,000,000 tons of coal. The numerous railroads with good grades furnish cheap transportation, and in Chicago and St. Louis the requisites of two great central markets are found. As far as the production is concerned, Illinois is perhaps equalled by Ohio. The statistics of the latter for 1883 are not at hand, but the rate of increase is probably about the same in the two states. Mr. Joseph Nimmo, in the abstract of statistics for 1883 (published by the U. S. treasury department), gives the production of coal in Ohio for 1882